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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/708,674

03/18/2004

William F. Clark JR.

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11/17/2005

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EXAMINER

QUINTO, KEVIN V

ART UNIT

PAPER NUMBER

2826

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/708,674

Applicant(s)

CLARK ET AL.

Examiner

Kevin Quinto

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-8,10-13 and 15-17 is/are rejected.
- 7) ☒ Claim(s) 3,9 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1, 2, 4-8, 10-13, and 15-17 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhu et al. (United States Patent Application Publication No. US 2005/0110085 A1).
4. So far as understood in claim 1, Zhu et al. (United States Patent Application Publication No. US 2005/0110085 A1, hereinafter referred to as the "Zhu" reference) discloses a similar device. Figures 2L and 3K of Zhu each disclose a fin-type field effect transistor with a fin (138 – figure 2L, 192- figure 3K) extending from a substrate (122 – figure 2L, 172- figure 3K). The fin (138, 192) has a gate dielectric (140, 146 – figure 2L, 192', 202- figure 3K) with different thicknesses (abstract, p.4 – claims 1 and 14). A

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plurality of fins is formed on the substrate (122, 172), each with a gate dielectric having different thicknesses (p.4 - claim 14).

5. In reference to claim 2, a plurality of fins is formed on the substrate (122, 172), each with a gate dielectric having different thicknesses (p.4 - claims 1 and 14). The examiner notes the limitation regarding the use of two different types of transistors with different gate dielectric thicknesses. However the examiner would like to point out that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963). Therefore claim 2 is not patentable over the Zhu reference.

6. With regard to claim 4, Zhu states that the gate dielectric has a greater thickness due to multiple layers while the smaller thickness is caused by less layers (p.4 - claims 1, 4, 14, 17).

7. In reference to claim 5, there is a cap (132 – figure 2L, 212- figure 3K) over the fins (138, 192).

8. With regard to claim 6, the cap (132, 212) is made of a nitride while the gate dielectrics (140, 146 and 192', 202) can be made of an oxide, oxynitride, or a high K dielectric (p.4 - claims 1, 6, 14, 16).

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9. In reference to claim 7, Zhu (US 2005/0110085 A1) discloses a similar device.

Figures 2L and 3K of Zhu each disclose a semiconductor structure with at least one fin-type field effect transistor with a fin (138, 192) extending from a substrate (122, 172).

Each fin (138, 192) comprises a channel region with source and drain regions (not shown) on opposite sides of the channel region. The fin (138, 192) has a gate dielectric (140, 146 and 192', 202) with different thicknesses which covers the channel region (p.4 - claims 1, 4, 14, 17). A plurality of fins is formed on the substrate (122, 172), each with a gate dielectric having different thicknesses (p.4 - claim 14)

10. In reference to claim 8, a plurality of fins is formed on the substrate (122, 172), each with a gate dielectric having different thicknesses (p.4 - claims 1 and 14). The examiner notes the limitation regarding the use of two different types of transistors with different gate dielectric thicknesses. However the examiner would like to point out that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963). Therefore claim 8 is not patentable over the Zhu reference.

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11. With regard to claim 10, Zhu states that the gate dielectric has a greater thickness due to multiple layers while the smaller thickness is caused by less layers (p.4 - claims 1, 4, 14, 17).

12. In reference to claim 11, there is a cap (132, 212) over the fins (138, 192).

13. With regard to claim 12, the cap (132, 212) is made of a nitride while the gate dielectrics (140, 146 and 192', 202) can be made of an oxide, oxynitride, or a high K dielectric (p.4 - claims 1, 6, 14, 16).

14. In reference to claim 13, Zhu (US 2005/0110085 A1) discloses a similar device. Figures 2L and 3K of Zhu each disclose a fin-type field effect transistor with a fin (138, 192) extending from a substrate (122, 172). The fin (138, 192) has a gate dielectric (140, 146 and 192', 202) with different thicknesses (p.4 - claims 1, 4, 14, 17). A plurality of fins is formed on the substrate (122, 172), each with a gate dielectric having different thicknesses (p.4 - claim 14). The examiner notes the limitation regarding the use of two different types of transistors with different gate dielectric thicknesses. However the examiner would like to point out that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963). Therefore claim 13 is not patentable over the Zhu reference.

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15. With regard to claim 15, Zhu states that the gate dielectric has a greater thickness due to multiple layers while the smaller thickness is caused by less layers (p.4 - claims 1, 4, 14, 17).

16. In reference to claim 16, there is a cap (132 – figure 2L, 212- figure 3K) over the fins (138, 192).

17. With regard to claim 17, the cap (132, 212) is made of a nitride while the gate dielectrics (140, 146 and 192', 202) can be made of an oxide, oxynitride, or a high K dielectric (p.4 - claims 1, 6, 14, 16).

### ***Double Patenting***

18. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

19. Claims 1, 2, 4-8, 10-13, and 15-17 are provisionally rejected on the ground of nonstatutory double patenting over claims 1, 4, 14, and 17 of copending Application No. 10/717,737. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: a finfet device having gate dielectric layers with different thicknesses.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

#### ***Allowable Subject Matter***

20. Claims 3, 9, and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

21. The following is a statement of reasons for the indication of allowable subject matter: the examiner is unaware of any prior art which suggests or renders obvious a double gate finfet device having multiple fins with two gate dielectric layers which are different in thickness.




***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quinto whose telephone number is (571) 272-1920. The examiner can normally be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KVQ



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